Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Part 15 of the Commission's Rules	)	ET Docket No. 10-97
Regarding Unlicensed Personal Communications	)	RM-11485
Service Devices in the 1920-1930 MHz band	)	

NOTICE OF PROPOSED RULEMAKING

Adopted: May 4, 2010 **Released: May 6, 2010**

Comment Date: [30 days after date of publication in the Federal Register]
Reply Comment Date: [45 days after date of publication in the Federal Register]

By the Commission:

I. INTRODUCTION

1. In this Notice of Proposed Rulemaking (Notice), the Commission proposes changes to Part 15 of the Rules to enable Unlicensed Personal Communications Service (UPCS) devices operating in the 1920-1930 MHz band (known as the UPCS band) to make more efficient use of this spectrum. We take this action in response to a Petition for Rulemaking filed by the Digital Enhanced Cordless Telecommunications Forum (DECT), an association that promotes digital cordless radio technology for short-distance voice and data applications.[1] The current rules prevent UPCS devices from accessing channels where a certain level of radio noise is detected, even though those channels remain usable. The proposed rule changes would adjust the radio noise level at which a channel would be deemed usable.

2. We specifically propose to revise Section 15.323 of our Rules to increase the least-interfered channel threshold that a UPCS device must monitor to determine whether there is a channel available on which to transmit (henceforth referred to as the least-interfered channel access method). We also propose to reduce from 40 to 20 channels the number of duplex system access channels that a UPCS device must monitor and use under the least-interfered channel access method. The proposed changes would increase the number of channels that could be used by UPCS devices, particularly those devices designed to transmit on wider bandwidth channels, and thus facilitate the introduction of unlicensed devices capable of providing access to broadband services in the 1920-1930 MHz band. We request comment on these proposals.

[1] *See* "Petition for Rulemaking to coordinate the service rules of the UPCS Band with those ultimately adopted for the AWS H Block," Petition for Rulemaking, filed Aug. 15, 2008, by DECT Forum, placed on Public Notice for comment on Sept. 4, 2008 (Report No. 2873; RM-11485) (DECT Petition). The DECT Forum is an international industry association of suppliers and operators of devices, systems, and networks using the DECT-based radio technology, which facilitates voice, data, and networking applications with range requirements up to a few hundred meters. *See* DECT Petition at 2.

II. BACKGROUND

3. The 1920-1930 MHz band is allocated to Fixed and Mobile services on a primary basis and is designated for use by UPCS devices on an unlicensed basis.[2] Currently, the most widespread use of the 1920-1930 MHz UPCS band is for cordless telephones.[3] Under the Commission's Rules, the 1920-1930 MHz band may be used for both asynchronous (generally data) and isochronous (generally voice) UPCS devices,[4] with maximum and minimum emission (*i.e.*, channel) bandwidths of 2.5 megahertz and 50 kilohertz, respectively.[5] UPCS devices using the 1920-1930 MHz band may not cause harmful interference, must accept interference that may be caused by the operation of an authorized radio station, another intentional or unintentional radiator, industrial, scientific, and medical (ISM) equipment, or an incidental radiator, and, if causing harmful interference, must cease operation upon notification by the Commission.[6] In order to limit the influence of and interference potential from UPCS devices to adjacent-channel, co-channel, and adjacent-band devices, the Commission's Rules limit UPCS devices' peak power and in-band and out-of-band emissions.[7]

4. To facilitate the sharing of channels in the UPCS band, the Rules require use of a "listen-before-transmit" protocol or "spectrum etiquette" that specifies a process of channel monitoring with a signal threshold.[8] To protect UPCS devices already using a channel from new transmissions, the Rules require each UPCS device to monitor the channel (*i.e.*, time/spectrum window) it intends to use before beginning transmissions and to defer use or find another channel if the monitored signal level is above an access threshold.[9] Transmissions may commence if no signal greater than 30 decibels (dB)

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[2] *See* 47 C.F.R. §§ 2.106, 15.301.

[3] *See* DECT Solutions at http://www.dect.org. *See also* Plantronics, Inc. comments at 1.

[4] *See* 47 C.F.R. § 15.303(a) and (d).

[5] *See* 47 C.F.R. § 15.323(a).

[6] *See* 47 C.F.R. § 15.5(b) and (c). UPCS devices must be measured for compliance with the performance requirements in Part 15 Subpart D of the Rules using ANSI C63.17-1998: "Methods of Measurement of the Electromagnetic and Operational Compatibility of Unlicensed Personal Communications Services (UPCS) Devices." *See* 47 C.F.R. § 15.31(a)(2).

[7] UPCS devices are limited to a peak transmit power of 100 microwatts (uW) multiplied by the square root of the channel bandwidth in Hertz (Hz), and the power spectral density must not exceed 3 milliwatts (mW) in any 3 kilohertz bandwidth as measured over a 3 kilohertz bandwidth. If a directional antenna is used, the peak transmit power must be reduced by the amount in decibels that the maximum directional gain exceeds 3 decibels isotropic (dBi). *See* 47 C.F.R. §§ 15.319(c), (d), and (e). In addition, emissions outside the sub-band a UPCS device is using must be attenuated below a reference power of 112 mW as follows: 30 dB between the sub-band and 1.25 megahertz above or below the sub-band; 50 dB between 1.25 and 2.5 megahertz above or below the sub-band; and 60 dB at 2.5 megahertz or greater above or below the sub-band. *See* 47 C.F.R. § 15.323(d). Emissions inside the sub-band a UPCS device is using are subject to a mask that is similar to the mask that is applicable to emissions outside the sub-band. *Id*.

[8] This etiquette was developed by the Wireless Information Networks Forum (WINForum), an industry alliance that represented 33 of the leading information technology companies at the time the original UPCS rules were adopted. In the *Broadband PCS Second R&O*, the Commission made some minor modifications to the WINForum etiquette and adopted it as part of the technical operating requirements for UPCS devices. *See* In the Amendment of the Commission's Rules to Establish New Personal Communications Services, GEN Docket No. 90-314, *Second Report and Order*, 8 FCC Rcd 7700, 7775-7778 (1993) (*Broadband PCS Second R&O*).

[9] *See* 47 C.F.R. § 15.323(c)(1)-(12). To prevent the monopolization of UPCS-band channels, the Rules also include UPCS transmission time limits. *See* 47 C.F.R. § 15.323(c)(3). The access threshold, transmitter power limits, and transmission time limits are designed such that frequency and time reuse both within a system and between systems are possible for indoor operations.

above thermal noise (TN + 30 dB) is detected.[10] If a signal level greater than 30 dB above thermal noise is detected on all of the channels the device monitors for possible use, however, it can access the channels with the lowest signal level below a threshold of 50 dB above thermal noise (TN + 50 dB), as long as the device is using and can monitor a minimum of 40 duplex system access channels.[11] The requirement for a UPCS device to use and monitor 40 channels was established when the UPCS-band Rules defined a maximum channel size of 1.25 megahertz for isochronous transmissions – resulting in a maximum of 8 channels that were then subdivided into numerous access channels – and UPCS devices were primarily using Personal Wireless Telecommunications (PWT) technology.[12] If the selected channels are unavailable, the UPCS device may either monitor and select different channels or seek to use the same channels after waiting a randomly chosen amount of time between 10 and 150 milliseconds.[13] If the device does not use and monitor 40 channels, it is limited to accessing channels with a signal level that is less than 30 dB above thermal noise. In adopting these requirements, the Commission believed that this spectrum etiquette would facilitate efficient use of the UPCS spectrum, minimize in-band and out-of-band interference, and permit all users to have equal access to the available spectrum on a shared basis.[14]

5. In 2004, the Commission provided additional flexibility for UPCS devices to offer both voice and data services using a wider variety of technologies by, *inter alia*, increasing the maximum bandwidth allowed for all transmission types to 2.5 megahertz and by allowing asynchronous operations along with isochronous operations in the 1920-1930 MHz band.[15] UPCS systems may sub-divide the channels to less than 2.5 megahertz as long as the channel size is greater than or equal to 50 kilohertz. This practice has resulted in greater use of the UPCS band – particularly by cordless phones and other

[10] *See* 47 C.F.R. § 15.323(c)(1)-(3). For UPCS devices that have a power output lower than the maximum permitted, they may increase their monitoring threshold by 1 dB for each 1 dB that the transmitter power is below the maximum permitted. *See* 47 C.F.R. § 15.323(c)(9). Thermal noise power, typically referred to as thermal noise, is produced by the random thermal agitation of electrons in an electronic circuit. The thermal noise power (in dBm) for a given emission (*i.e.*, channel) bandwidth is defined by the formula 10 log (1000 x kTB), where k is Boltzmann's Constant (1.38 x 10^{-23} W/Hz/K); T is the ambient temperature in degrees Kelvin (*e.g.*, 298º K at room temperature (77º F)); and B is the emission bandwidth of the device in Hertz. *See* 47 C.F.R. § 15.303(j). In a 50-kilohertz emission bandwidth, the thermal noise power at room temperature is approximately -127 dBm. The thermal noise power at room temperature in a 2.5-megahertz emission bandwidth is approximately -110 dBm.

[11] *See* 47 C.F.R. § 15.323(c)(5).

[12] Under PWT, the eight 1.25-megahertz channels are each sub-divided into 12 full-slot access channels, which results in a total of 96 duplex access channels, and into 6 double-slot (also known as long-slot) access channels, which results in a total of 48 duplex access channels. Thus, the requirement to define and monitor 40 channels ensured that devices using both full-slot and double-slot UPCS access channels could use the least-interfered channel access method. *See* DECT Petition, Annex I, at 8.

[13] *See* 47 C.F.R. § 15.323(c)(6).

[14] *See Broadband PCS Second R&O*, 8 FCC Rcd at 7777 ¶ 183.

[15] *See* Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems, ET Docket No. 00-258, Petition for Rule Making of the Wireless Information Networks Forum Concerning the Unlicensed Personal Communications Service, RM-9498, Petition for Rule Making of UTStarcom, Inc., Concerning the Unlicensed Personal Communications Service, RM-10024, Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for use by the Mobile-Satellite Service, ET Docket No. 95-18, *Sixth Report and Order, Third Memorandum Opinion and Order, and Fifth Memorandum Opinion and Order*, 19 FCC Rcd 20720, 20755 ¶ 79 (2004) (*AWS Sixth R&O*). *See* also 47 C.F.R. §§ 15.303(a) and (d); 15.323(a).

consumer devices using the DECT technology.[16] By 2009, DECT devices' share of the cordless telephone market in the United States had risen to more than 70 percent.[17]

6. In its petition for rulemaking, DECT requests that we modify the Part 15 Rules to either eliminate or increase the least-interfered channel monitoring threshold and to reduce the number of channels a UPCS device must use and monitor in order to operate under the least-interfered channel access method.[18] Specifically, DECT proposes that we amend Section 15.323(c)(5) of the Rules to: 1) eliminate the least-interfered channel monitoring threshold or, alternatively, to increase the threshold from 50 dB above thermal noise to 65 dB above thermal noise; and 2) reduce from 40 to 20 channels the number of duplex system access channels that a UPCS device must use and monitor in order to operate under the least-interfered channel access method.[19] As described by DECT, a UPCS device without a least-interfered channel monitoring threshold would survey the required minimum number of channels and transmit on the channels with the lowest power.[20] According to DECT, if the least-interfered channel monitoring threshold is eliminated or increased, a UPCS device would be able to access channels that are actually usable for communication but that cannot be accessed under the existing 50 dB above thermal noise threshold.[21] DECT also indicates that if the number of channels a UPCS device must use and monitor is reduced from 40 to 20 channels, broadband UPCS devices that use fewer than 40 channels (*i.e.,* that use wider bandwidth channels) will be permitted to use the least-interfered channel access method and won't be restricted to using only channels with a signal level less than 30 dB above thermal noise.[22] DECT states that neither of these changes will cause interference to adjacent-band AWS and PCS services.[23]

7. DECT claims that its requested Part 15 rule changes would also limit the potential for 1915-1920 MHz-band mobile transmitters' out-of-band emissions to restrict UPCS devices' use of the UPCS band once operations begin in the 1915-1920 MHz band.[24]

8. As background, in 2004, the Commission re-designated the lower 10 megahertz of the UPCS band (*i.e.*, 1910-1920 MHz) for licensed Fixed and Mobile services on a primary basis, to support the types of high-powered mobile applications associated with Advanced Wireless Service (AWS) and

[16] *See* UTAM, Inc. Report to the FCC, filed July 1, 2009, at 2-3. The DECT technology is a flexible digital radio access standard for cordless communications in residential, corporate, and public environments. In addition to providing for voice and multimedia traffic, the DECT standard includes many forward-looking technical features that can allow DECT-based cordless systems to be used to facilitate new communications developments such as Internet access and interworking with other fixed and wireless services such as Integrated Services Digital Network (ISDN) and Global System for Mobile Communications (GSM). *See* DECT Forum website at http://www.dect.org/.

[17] *See* DECT Forum *Ex Parte* filing, dated Dec. 14, 2009, at 27.

[18] *See* DECT Petition at 4-5.

[19] *See id*.

[20] *See* DECT Petition, Annex I, at 7.

[21] *See* DECT Petition, Annex I, at 18.

[22] *See* DECT Petition, Annex I, at 8-9.

[23] *See* DECT Petition at 1 and 4.

[24] All commenters agree with DECT on this issue. *See*, *e.g.*, Aastra-DeTeWe comments at 2-3; Ascom comments at 1; Baycom Comments; Bithium comments at 1; DSPG comments at 3; Panasonic comments at 2-3; Philips comments at 1-2; Plantronics comments at 3; SiTel comments at 1; TIA comments at 5-6; and UTAM comments at 2-3.

Broadband PCS use, after finding that that portion of the UPCS band was not being used.[25] Of the 10 megahertz of UPCS spectrum that was re-designated for PCS/AWS use, the Commission assigned the lower 5 megahertz (*i.e.*, 1910-1915 MHz) to Nextel (now Sprint Nextel) in conjunction with the 800 MHz-band relocation proceeding.[26] The Commission paired the upper 5 megahertz (*i.e.*, 1915-1920 MHz) with the 1995-2000 MHz band, which had previously been re-designated for AWS use.[27] The Commission has proposed service rules for the paired 1915-1920/1995-2000 MHz bands (denoted as the AWS-2 Block[28]).

9. DECT notes that for mobile and portable devices that would transmit in the 1915-1920 MHz band, the Commission has proposed an out-of-band emission limit of -13 dBm/MHz.[29] DECT submits that this proposed out-of-band emission limit is equivalent to a signal level of 120 dB above thermal noise (TN + 120 dB) in the first megahertz of the UPCS band (*i.e.*, 1920-1921 MHz) and is equivalent to a signal level of 101 dB above thermal noise (TN + 101 dB) in the remainder of the UPCS band (*i.e.*, 1921-1930 MHz). It indicates that if this out-of-band emissions limit is ultimately adopted, the first megahertz of the UPCS band would be blocked from use under the current threshold of 50 dB above thermal noise unless the AWS mobile transmitter is separated from the UPCS device by a distance of at least 30 meters; the entire UPCS band would be blocked from use unless the AWS mobile transmitter is separated from the UPCS device by a distance of at least 4 meters.[30] Thus, DECT asserts, an increase in the least-interfered channel monitoring threshold is needed so 1915-1920 MHz-band AWS mobile

[25] *See* Improving Public Safety Communications in the 800 MHz Band, Consolidating the 800 and 900 MHz Industrial/Land Transportation and Business Pool Channels, WT Docket 02-55, Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems, ET Docket No. 00-258, Petition for Rule Making of the Wireless Information Networks Forum Concerning the Unlicensed Personal Communications Service, RM-9498, Petition for Rule Making of UT Starcom, Inc., Concerning the Unlicensed Personal Communications Service, RM-10024, Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for use by the Mobile Satellite Service, ET Docket No. 95-18, *Report and Order, Fourth Report and Order, Fourth Memorandum Opinion and Order, and Order*, 19 FCC Rcd 14969, 15088 ¶ 227 (2004) (*800 MHz Band R&O*); *AWS Sixth R&O,* 19 FCC Rcd at 20740 ¶ 41.

[26] In the *800 MHz Band R&*O, the Commission paired the 1910-1915 MHz band with the 1990-1995 MHz band and licensed this spectrum to Nextel under Part 24 (Broadband PCS) in exchange for vacating certain 800-MHz band spectrum and assuming the cost of the 800-MHz band reconfiguration. *See 800 MHz Band R&O* 19 FCC Rcd at 15085 ¶ 223; 15091 ¶ 238. Domestically, Broadband PCS systems have been implemented as frequency division duplex (FDD) systems, which use the 1850-1910 MHz band for mobile station (*i.e.*, uplink) transmissions and the 1930-1990 MHz band for base station (*i.e.*, downlink) transmissions. The 1910-1915 MHz block must be used for mobile/portable station transmissions while the 1990-1995 MHz block must be used for base station transmissions. *See* 47 C.F.R. § 24.229(c).

[27] *See AWS Sixth R&O,* 19 FCC Rcd at 20740 ¶ 41.

[28] *See* the AWS Band Plan at http://wireless.fcc.gov/services/aws/data/awsbandplan.pdf. These bands are also referred to as the AWS-2 H Block. *See also* n.40, *infra*.

[29] *See* DECT Petition at 4. *See also* Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands, WT Docket No. 04-356, Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands, WT Docket No. 02-353, *Notice of Proposed Rulemaking*, 19 FCC Rcd 19263, 19299 ¶¶ 90-91, 19303-04 ¶ 106 (2004) (*AWS-2 Service Rules NPRM*); Service Rules for Advanced Wireless Services in the 2155-2175 MHz Band, WT Docket No. 07-195, Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands, WT Docket No. 04-356, *Further Notice of Proposed Rulemaking*, 23 FCC Rcd 9859, 9860-61 ¶ 4, 9877 (2008) (*AWS-2/AWS-3 Service Rules FNPRM*).

[30] *See* DECT Petition, Annex I, at 4-5. According to DECT, 30 meters separation would attenuate the out-of-band emissions by 70 dB; 4 meters separation would attenuate the out-of-band emissions by 51 dB. *Id*.

transmitters in close proximity to a UPCS device will not limit, or even deny, unlicensed devices access to the UPCS band.

10. DECT's petition was placed on Public Notice on September 4, 2008.[31] Twelve parties filed comments.[32] All commenters support DECT's proposal to either eliminate or at least increase the least-interfered channel threshold.[33] All commenters also support DECT's proposal to reduce the number of channels a UPCS device must define and monitor in order to use the least-interfered channel access method.[34]

III. DISCUSSION

11. We believe there is merit to DECT's requests to increase the UPCS least-interfered channel monitoring threshold and to reduce the number of channels that a UPCS device must monitor and use in order to use the least-interfered channel access method. We are persuaded that the requested modifications would have substantive benefits for users of devices that operate in the UPCS band and promote more efficient use of the UPCS-band spectrum. We therefore are proposing to modify our UPCS Rules as DECT requests. We note that our previous modifications to the UPCS-band operating rules to widen the maximum allowed bandwidth and permit asynchronous operations together with isochronous operations in the 1920-1930 MHz band have resulted in significantly more use of the UPCS band. We believe these changes that DECT requests are likely to produce analogous results. In particular, we believe that the proposed rule modifications would facilitate the development of unlicensed devices capable of providing access to broadband services.

12. We propose to modify Section 15.323 to specify a least-interfered channel monitoring threshold of 65 dB above thermal noise, as reflected in the proposed rules set forth in Appendix A. We believe this action would serve the public interest by allowing more devices to access usable channels and thereby increasing the utilization of the UPCS band. We agree with DECT that increasing this threshold would allow UPCS devices to transmit on channels that currently are restricted from use under the existing 50 dB above thermal noise threshold, but that are actually acceptable for use.[35]

13. We observe that the least-interfered channel monitoring threshold level used in one UPCS system could affect the range and channel availability of other UPCS systems. The absence of a least-interfered channel monitoring threshold – where a UPCS device would survey the required minimum number of channels and transmit on the channels with the lowest power and an alternative

[31] *See* Consumer & Governmental Affairs Bureau Reference Information Center Petition for Rulemakings Filed, Report No. 2873, September 4, 2008, at http://fjallfoss.fcc.gov/ecfs2/document/view?id=6520066543.

[32] Aastra DeTeWe GmbH (Aastra-DeTeWe); Ascom Wireless Solutions (Ascom); Baycom Opto-Elec. Co., Ltd.(Baycom); Bithium – Sistemas de Telecommunicacoes (Bithium); DSP Group, Inc. (DSPG); Panasonic Corporation of America (Panasonic); Philips Consumer Lifestyle (Philips); Plantronics, Inc. (Plantronics); SiTel Semiconductor B.V. (SiTel); Telecommunications Industry Association (TIA); UTAM, Inc. (UTAM); VTech Communications (VTech).

[33] *See generally* Aastra-DeTeWe Comments; Ascom Comments; Baycom Comments; Bithium Comments; DSPG Comments; Panasonic Comments; Philips Comments; Plantronics Comments; SiTel Comments; TIA Comments; and UTAM Comments.

[34] *See generally* Aastra-DeTeWe Comments; Ascom Comments; Baycom Comments; Bithium Comments; DSPG Comments; Panasonic Comments; Philips Comments; Plantronics Comments; SiTel Comments; TIA Comments; and UTAM Comments. No reply comments were filed.

[35] *See* DECT Petition, Annex I at 18.

approach suggested by DECT[36] – could require an affected system to install additional base stations to mitigate the impact. This scenario could occur, for example, in a small office environment with different occupants operating separate systems in close proximity. We believe that increasing the least-interfered channel monitoring threshold to 65 dB above thermal noise is preferable to DECT's alternative proposal to eliminate the threshold and strikes an appropriate balance. We believe that maintaining a specific least-interfered channel monitoring threshold would limit the potential for one UPCS system's devices to restrict the range and access to channels of another UPCS system's devices and avoid undue congestion in the UPCS band.

14. At the same time, an increase in the least-interfered channel monitoring threshold would increase the utilization of the UPCS band and reduce UPCS system infrastructure costs. We note that DECT states that a threshold increase to 65 dB above thermal noise would increase the utilization of the UPCS band by over 60 percent.[37] Also, as DECT states, although a threshold of 50 dB above thermal noise optimizes the range of UPCS devices, an increase in the monitoring threshold from 50 to 65 dB above thermal noise would allow manufacturers to optimize their systems for density of devices rather than range, depending on the needs of users. As a result, this would allow more UPCS devices to be used within close proximity of one another, such as in adjacent cubicles in an office environment. Although each device would lose some range in such a scenario due to the density of spectral use, any decrease in range would likely have little effect on users because the devices in such dense systems typically operate just a short distance from the nearest base station.[38] We also believe that a least-interfered channel monitoring threshold of 65 dB above thermal noise would help limit the potential for in-band and out-of-band interference, facilitate efficient use of the UPCS spectrum, and permit all users to access the available spectrum on a shared basis. We seek comment on this proposal. We also seek comment on our observations with respect to the selection of 65 dB above thermal noise as the monitoring threshold and whether some alternative value or elimination of the threshold would be more appropriate.

15. Because all UPCS devices would continue to operate using a listen-before-talk protocol, they will not interfere with each other once a device is transmitting on a channel. Furthermore, because UPCS devices all operate at relatively low power levels, two devices would need to be within less than 1 foot of each other to impact one another.[39] Consequently, we believe the probability of interference occurring among UPCS devices operating under the proposed monitoring threshold or between such devices and those operating under the current monitoring threshold will remain low. In addition, although an increase in the least-interfered channel threshold could, in some cases, result in an increased number of UPCS devices simultaneously operating in a given location, they would be operating with relatively low peak transmitter power and out-of-band emissions limits. Thus, we believe the potential for harmful interference to nearby relatively higher-power AWS and PCS devices (either fixed or mobile) receiving in the adjacent 1915-1920 and 1930-1990 MHz bands, respectively, will not be significantly increased in such cases.[40] We seek comment on these observations.

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[36] A few commenters believe that the least-interfered channel threshold should simply be eliminated. *See* Panasonic comments at 2; SiTel comments at 1; and TIA comments at 3 and 6.

[37] *See* DECT Petition, Annex I, at 19.

[38] *See* DECT Petition, Annex I, at 14.

[39] *See* DECT Petition, Annex I, at 30.

[40] Under the Commission's Rules, harmful interference is defined as: "Interference which endangers the functioning of a radionavigation service or of other safety services or seriously degrades, obstructs, or repeatedly interrupts a radiocommunication service operating in accordance with [the ITU] Radio Regulations." *See* 47 C.F.R. § 2.1. For AWS operations in the adjacent AWS-2 band, the Commission tentatively concluded in 2004 that only mobile and fixed stations' (*i.e.*, uplink) transmissions should be allowed in the 1915-1920 MHz band. *See AWS-2 Service Rules NPRM* 19 FCC Rcd at 19303-04, ¶ 106 and ¶ 109. *See also AWS-2/AWS-3 Service Rules FNPRM* proposed

(continued….)

16. We also propose to modify rule Section 15.323 to reduce from 40 to 20 channels the number of channels that a UPCS device must monitor and use in order to operate under the least-interfered channel access method in the 1920-1930 MHz band, as reflected in the proposed rules set forth in Appendix A. Such action would appear to serve the public interest by allowing state-of-the-art UPCS devices that can provide broadband services, but using fewer than 40 channels, to operate under the least-interfered channel access method and access channels with a higher signal level, if available.[41] DECT states that halving the number of monitored and used channels is justified by the Commission's previous decision to double the maximum allowed UPCS channel bandwidth from 1.25 to 2.5 megahertz, as described above.[42] It also indicates that there are now UPCS devices operating with up to five 2-megahertz-wide channels that provide more advanced state-of-the-art broadband services. When these wider channels are subdivided, however, fewer access channels are available to satisfy the current minimum number of channels to be monitored under the least-interfered channel rule.[43] Devices that can support access to broadband services but use fewer than 40 channels are thus limited to using channels with a signal level less than 30 dB above thermal noise, as described above.[44] Consequently, these devices' access to the UPCS band is severely limited in many instances, especially in areas of high use of UPCS devices.[45] Reducing the number of monitored channels would increase the utilization of the UPCS band by allowing wider-bandwidth devices to access channels that are usable under the least-interfered channel access criteria. Also, if the number of channels that must be monitored and used is reduced so that wider-bandwidth devices' access to channels is unrestricted, the ability of these devices to have higher throughputs (*i.e.*, data rates) could help to improve the efficiency of the UPCS band. In addition, maintaining a requirement for UPCS devices to monitor and use at least 20 channels would enable all users to have equal access to the available spectrum on a shared basis. We seek comment on this proposal.

17. DECT filed comments on the *AWS-2/AWS-3 Service Rules FNPRM*, expressing concern about the potential for the out-of-band emissions limit proposed for 1915-1920 MHz-band mobile transmitters to restrict UPCS devices' access to the UPCS band.[46] Nonetheless, because DECT believes

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revisions to 47 C.F.R. § 27.50(d)(4) regarding the power limits for mobile and uplink fixed stations operating in the 1915-1920 MHz band, 23 FCC Rcd at 9876. Under the proposed rules in the *AWS-2 Service Rules NPRM*, AWS-2 base station (*i.e.*, downlink) transmissions would be restricted to the 1995-2000 MHz band. *See AWS-2 Service Rules NPRM*, 19 FCC Rcd at 19304-05, n.219 and ¶ 110.

[41] VTech asserts that adoption of DECT's proposed changes will promote the introduction of advanced cordless products that can offer broadband services in the UPCS band. *See* VTech *Ex Parte* Comments, filed October 15, 2009, at 1.

[42] *See* DECT Petition at 3-4.

[43] According to DECT, under standard DECT technology, the five 2-megahertz channels are each sub-divided into 12 full-slot channels and 6 double-slot channels, resulting in UPCS devices using 60 full-slot duplex access channels and 30 double-slot duplex access channels. When these devices are operating with only 30 double-slot channels or with some combination of full-slot and double-slot channels that results in fewer than 40 used channels, they are not permitted to use the least-interfered channel access method and access channels with a higher signal level (currently less than 50 dB above thermal noise), if available. *See* DECT Petition, Annex I, at 8-9. *See* n.12, *supra*, regarding the number of access channels available using 8 narrower channels and PWT technology.

[44] See the Office of Engineering and Technology's (OET's) Knowledge Database Publication No. (KDB) 377704, for an explanation of how the current least-interfered channel access rule in Section 15.323(c)(5) applies to UPCS-band devices that use fewer than 40 access channels (*i.e.*, use wider-bandwidth channels). KDB 377704 can be accessed at www.fcc.gov/labhelp.

[45] *See* DECT Petition, Annex I, at 8-9; Plantronics comments at 3.

[46] *See* Comments from the DECT Forum on the [*AWS-2/AWS-3 Service Rules FNPRM*] specifically related to Revision of the Rules that may Impact the UPCS Band, filed July 21, 2008, in WT Docket No. 07-195 and WT Docket No. 04-356.

that its proposed Part 15 rule changes will improve the utilization, quality, and services of the UPCS band, especially for new state-of the-art broadband services, DECT asks that the Commission not defer action on the instant petition pending the outcome of the AWS-2 proceeding.[47] In this Notice, we address only the DECT Forum petition for rulemaking of the Part 15 rules for the UPCS band. We neither solicit comments on nor make any decision with respect to the pending AWS-2 service rules proceeding.

18. *Other Matters*. In January 1993, representatives from a broad range of UPCS equipment manufacturers created the Unlicensed PCS Ad Hoc Committee for 2 GHz Microwave Transition and Management (UTAM) to facilitate the transition of the 1920-1930 MHz band from fixed microwave radio service use to UPCS use.[48] UTAM incorporated itself as a not-for-profit corporation under the name of UTAM, Inc., in July 1993.[49] In the *Broadband PCS Second Report and Order*, the Commission designated UTAM, Inc., to coordinate and manage the transition of the 1920-1930 MHz band from incumbent fixed microwave operations to UPCS use.[50] The rules the Commission adopted to implement this process were to sunset after a ten-year period.[51] Because the need for UPCS devices to protect fixed microwave incumbents in the 1920-1930 MHz band sunset on April 4, 2005, on our own motion, we propose to remove Section 15.307 of the Rules.[52] In proposing this change, we note that with the sunset of the requirement that UPCS devices protect fixed microwave incumbents in the UPCS band, it is no longer necessary to 1) distinguish between coordinatable and non-coordinatable UPCS devices under the equipment authorization process, as specified in Section 15.307(c);[53] 2) require a coordinatable UPCS device to incorporate certain coordination features, as specified in Sections 15.307(d) and (e);[54] 3) require UPCS operators to protect fixed microwave incumbents in the 1920-1930 MHz band, as set forth in Section 15.307(g);[55] and 4) require a UPCS device to cease operating upon relocation until coordination for the new location is verified by UTAM, Inc., as set forth in Section 15.307(h).[56] Furthermore, Sections 15.307(a), (b), and (f) of our Rules, which respectively 1) describes UTAM, Inc.'s function; 2) require each applicant for certification (*i.e.*, authorization) of a UPCS device to be a participating member of UTAM, Inc.; and 3) sets forth that the requirement for including the disabling mechanism in a UPCS device would be discontinued when the Commission determines that UPCS devices no longer need to be coordinated, are also no longer needed.[57] In addition, we propose to delete the UTAM, Inc.-related

[47] *See* DECT Petition at 4-5.

[48] *See Broadband PCS Second R&O,* 8 FCC Rcd at 7736, n.74; UTAM *Ex Parte Filing*, GEN Docket No. 90-314, ET Docket No. 92-9, filed May 14, 1993, at iii; and UTAM, Inc. Statement for the Record, GEN Docket No. 90-314, filed April 11, 1994, at 18.

[49] *See* UTAM Reply Comments, GEN Docket No. 90-314, ET Docket No. 92-100, filed July 20, 1993, at 10 and Appendix A, Certificate of Incorporation of UTAM, Inc.

[50] *See Broadband PCS Second R&O,* 8 FCC Rcd at 7783 ¶ 202.

[51] *See* "BROADBAND PCS ENTITIES AND FIXED MICROWAVE SERVICES LICENSEES REMINDED OF APRIL 4, 2005 SUNSET OF RELOCATION COST COMPENATION AND MICROWAVE COST SHARING RULES," Public Notice, DA 05-612, (rel. March 8, 2005). *See also* 47 C.F.R. §§ 24.253, 101.79.

[52] *See* "UNLICENSED PCS DEVICES WILL NO LONGER BE SUBJECT TO COORDINATION REQUIREMENTS AFTER APRIL 4, 2005," Public Notice, DA 05-1005, (rel. April 4, 2005).

[53] *See* 47 C.F.R. § 15.307(c).

[54] *See* 47 C.F.R. §§ 15.307(d) and (e).

[55] *See* 47 C.F.R. § 15.307(g).

[56] *See* 47 C.F.R. § 15.307(h). UTAM, Inc., was designated to coordinate and manage the transition of the 1920-1930 MHz band from the Private Operational-Fixed Microwave Service (OFS) operating under Part 101 of Chapter 47 C.F.R. to UPCS operations. *See* 47 C.F.R. § 15.307(a).

[57] *See* 47 C.F.R. § 15.307(a), (b), and (f).

labeling requirement in Section 15.311 because UPCS devices are no longer coordinated by UTAM, Inc.[58] We further propose to delete the definitions in Section 15.303(b) and (e) that were applicable when UPCS devices were either coordinatable or non-coordinatable because these rules are now unnecessary.[59] We seek comment on all of these proposals, and on any other rules changes that might be warranted as a result of the sunset of the transition of the band from incumbent fixed microwave operations to UPCS use.

19. We also take this opportunity to propose modifications to certain other UPCS rules to make them consistent with other changes that have been made to the rules. In this regard, we propose to amend Section 15.31(a)(2) to update the version of the standard by which UPCS devices must be measured for compliance with the performance requirements in Part 15 Subpart D of the Rules,[60] and to revise Section 15.323(a) to correct a typographical error in the second sentence. Also, consistent with the decision in the *AWS Sixth R&O*, as noted above, we propose to delete the definition in Section 15.303(i) that was applicable when asynchronous and isochronous operations were in separate sub-bands[61] and to amend Section 15.319 to specifically state that both asynchronous and isochronous operations are permitted in the 1920-1930 MHz band. These proposed rule modifications are reflected in Appendix A. We seek comment on all of these proposals. In addition, we seek comment on changes to any of the other rules regarding UPCS devices which should be made due to the kind of errors or intervening events or developments that we have identified in this paragraph.

IV. PROCEDURAL MATTERS

A. Ex Parte Rules – Permit-But-Disclose

20. This is a permit-but-disclose notice and comment rulemaking proceeding. *Ex parte* presentations are permitted, except during the Sunshine Agenda period, provided they are disclosed pursuant to the Commission's rules.[62]

B. Comment Period and Procedures

21. Pursuant to sections 1.415 and 1.419 of the Commission's rules 47 CFR §§ 1.415, 1.419, interested parties may file comments and reply comments on or before the dates indicated on the first page of this document. Comments may be filed using: (1) the Commission's Electronic Comment Filing System (ECFS), (2) the Federal Government's eRulemaking Portal, or (3) by filing paper copies. *See Electronic Filing of Documents in Rulemaking Proceedings*, 63 FR 24121 (1998).

- Electronic Filers: Comments may be filed electronically using the Internet by accessing the ECFS: http://fjallfoss.fcc.gov/ecfs2/ or the Federal eRulemaking Portal: http://www.regulations.gov.

- Paper Filers: Parties who choose to file by paper must file an original and four copies of each filing. If more than one docket or rulemaking number appears in the caption of this proceeding, filers must submit two additional copies for each additional docket or rulemaking number.

[58] *See* 47 C.F.R. § 15.311.

[59] *See* 47 C.F.R. § 15.303(b), (e).

[60] *See* 47 C.F.R. § 15.31(a)(2). *See also* n.6, *supra*.

[61] *See* 47 C.F.R. § 15.303(i).

[62] *See generally* 47 C.F.R. §§ 1.1202, 1.1203, 1.1206.

Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

- All hand-delivered or messenger-delivered paper filings for the Commission's Secretary must be delivered to FCC Headquarters at 445 12th St., SW, Room TW-A325, Washington, DC 20554. The filing hours are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes must be disposed of before entering the building.

- Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9300 East Hampton Drive, Capitol Heights, MD 20743.

- U.S. Postal Service first-class, Express, and Priority mail must be addressed to 445 12th Street, SW, Washington DC 20554.

People with Disabilities: To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (tty).

C. Initial Regulatory Flexibility Analysis

22. As required by the Regulatory Flexibility Act of 1980 (RFA),[63] the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on small entities of the policies and rules proposed in the Notice. The IRFA is found in Appendix B. We request written public comment on the analysis. Comments must be filed in accordance with the same deadlines as comments filed in response to the Notice, and must have a separate and distinct heading designating them as responses to the IRFA. The Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, will send a copy of this Notice, including the IRFA, to the Chief Counsel for Advocacy of the Small Business Administration.

D. Paperwork Reduction Analysis

23. This document does not contain proposed information collection(s) subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. In addition, therefore, it does not contain any new or modified "information collection burden for small business concerns with fewer than 25 employees," pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. 3506(c)(4).

E. Further Information

24. For further information regarding this Notice of Proposed Rulemaking, please contact Patrick Forster, Spectrum Policy Branch, Policy and Rules Division, Office of Engineering and Technology, Federal Communications Commission, 445 12th Street, S.W., Washington, DC 20554, at 202-418-7061 or via the Internet at Patrick.Forster@fcc.gov.

V. ORDERING CLAUSES

25. Accordingly, IT IS ORDERED, pursuant to Sections 1, 2, 4(i), 301, 302, and 303(f) of the Communications Act of 1934, 47 U.S.C. §§ 151, 152, 154(i), 301, 302a, and 303(f), that this Notice of Proposed Rulemaking is hereby ADOPTED.

[63] *See* 5 U.S.C. § 603.

26. IT IS FURTHER ORDERED that NOTICE IS HEREBY GIVEN of the proposed regulatory changes described in this Notice of Proposed Rulemaking, and that comment is sought on these proposals.

27. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Notice of Proposed Rulemaking, including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A

Proposed Rules

For the reasons set forth in the preamble, the Federal Communications Commission proposes to amend Part 15 of Title 47 of the Code of Federal Regulations to read as follows:

Part 15 – RADIO FREQUENCY DEVICES

1. The authority citation for Part 15 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 302a, 303, 304, 307, 336, and 544a.

2. Section 15.31 is amended by revising paragraph (a)(2) to read as follows:

§ 15.31 Measurement standards.

(a) * * *

(1) * * *

(2) Unlicensed Personal Communication Service (UPCS) devices are to be measured for compliance using ANSI C63.17-2006: ‘‘Methods of Measurement of the Electromagnetic and Operational Compatibility of Unlicensed Personal Communications Services (UPCS) Devices’’, (incorporated by reference, see § 15.38). This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51.

* * * * *

3. Section 15.38 is amended by revising paragraph (b)(12) to read as follows:

§ 15.38 Incorporation by reference.

* * * * *

(b) * * *

(12) ANSI C63.17-2006: “Methods of Measurement of the Electromagnetic and Operational Compatibility of Unlicensed Personal Communications Services (UPCS) Devices”, 2006, IBR approved for § 15.31.

* * * * *

4. Section 15.303 is amended by removing paragraphs (b), (e), (i), and redesignating the remaining paragraphs in alphabetical order.

5. Part 15, Subpart D is amended by removing Section 15.307.

6. Part 15, Subpart D is amended by removing Section 15.311.

7. Section 15.319 is amended by revising paragraph (b) to read as follows:

§ 15.319 General technical requirements.

* * * * *

(b) All transmissions must use only digital modulation techniques. Both asynchronous and isochronous operations are permitted within the 1920-1930 MHz band.

* * * * *

8. Section 15.323 is amended by revising the caption and paragraphs (a), (c)(5), (d), and (e) to read as follows:

§ 15.323 Specific requirements for devices operating in the 1920-1930 MHz band.

(a) Operation shall be contained within the 1920-1930 MHz band. The emission bandwidth shall be less than 2.5 MHz. * * * * *

* * * * *

(c) * * *

(5) If access to spectrum is not available as determined by the above, and a minimum of 20 duplex system access channels are defined for the system, the time and spectrum windows with the lowest power level below a monitoring threshold of 65 dB above the thermal noise power determined for the emission bandwidth may be accessed. * * * * *

* * * * *

(d) Emissions outside the band shall be attenuated below a reference power of 112 milliwatts as follows: 30 dB between the band and 1.25 MHz above or below the band; 50 dB between 1.25 and 2.5 MHz above or below the band; and 60 dB at 2.5 MHz or greater above or below the band. Emissions inside the band must comply with the following emission mask: In the bands between 1B and 2B measured from the center of the emission bandwidth the total power emitted by the device shall be at least 30 dB below the transmit power permitted for that device; in the bands between 2B and 3B measured from the center of the emission bandwidth the total power emitted by an intentional radiator shall be at least 50 dB below the transmit power permitted for that radiator; in the bands between 3B and the band edge the total power emitted by an intentional radiator in the measurement bandwidth shall be at least 60 dB below the transmit power permitted for that radiator.* * * * *

(e) The frame period (a set of consecutive time slots in which the position of each time slot can be identified by reference to a synchronizing source) of an intentional radiator operating in this band shall be 20 milliseconds or 10 milliseconds/X where X is a positive whole number. * * * * *

* * * * *

APPENDIX B

Initial Regulatory Flexibility Analysis

As required by the Regulatory Flexibility Act of 1980, as amended (RFA),[1] the Commission has prepared this present Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on small entities by the policies and rules proposed in this Notice of Proposed Rule Making (NPRM). Written public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines specified on the first page of this *Notice*. The Commission will send a copy of this NPRM, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).[2] In addition, the NPRM and IRFA (or summaries thereof) will be published in the Federal Register.[3]

A. Need for, and Objectives of, the Proposed Rules.

This NPRM proposes rules and seeks comment on specific issues related to the operation of unlicensed Personal Communications Services (UPCS) devices operating in the 1920-1930 MHz band (known as the UPCS band). The proposals are intended to improve the utilization of the UPCS band by increasing access to usable channels whose use is restricted under the current rules, by reducing infrastructure costs through allowing a greater density of UPCS devices to be used with fewer base stations, and by preventing the out-of-band emissions that have been proposed for Advanced Wireless Service (AWS) mobile transmitters in the 1915-1920 MHz from limiting UPCS devices' access to the 1920-1930 MHz UPCS band. The proposals are also designed to allow UPCS devices that are using fewer that 40 defined channels to use the UPCS least-interfered channel access method. Permitting these devices to use the least-interfered channel access method would prevent these devices' access to the UPCS band from being severely limited. The NPRM seeks comment on increasing the least-interfered channel threshold that UPCS devices must monitor for when using the least-interfered channel access method from 50 decibels (dB) above thermal noise to 65 dB above thermal noise. In addition, the NPRM seeks comment on reducing from 40 to 20 channels the number of channels a UPCS device must define and monitor in order to use the least-interfered channel access method.

B. Legal Basis.

This action is authorized under Sections 1, 4(i), 302, 303(f) and (r), 332, and 337 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 1, 4(i), 154(i), 302a, 303(f) and (r), 332, 337.

C. Description and Estimate of the Number of Small Entities to Which the Proposed Rule Will Apply.

The RFA directs agencies to provide a description of and, where feasible, an estimate of the number of small entities that may be affected by the proposed rules, if adopted.[4] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction." In addition, the term "small business" has the same meaning as the

[1] *See* 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. § 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996, (SBREFA) Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[2] *See* 5 U.S.C. § 603(a).

[3] *See* 5 U.S.C. § 603(a).

[4] *Id*. at § 603(b)(3).

term "small business concern" under the Small Business Act.[5] A small business concern is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.[6]

Nationwide, there are a total of approximately 29.6 million small businesses, according to the SBA.[7] A "small organization" is generally "any not-for-profit enterprise which is independently owned and operated and is not dominant in its field."[8] Nationwide, as of 2002, there were approximately 1.6 million small organizations.[9] The term "small governmental jurisdiction" is defined generally as "governments of cities, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand."[10] Census Bureau data for 2002 indicate that there were 87,525 local governmental jurisdictions in the United States.[11] We estimate that, of this total, 84,377 entities were "small governmental jurisdictions."[12] Thus, we estimate that most governmental jurisdictions are small.

The proposals in this NPRM affect fixed service (FS) stations licensed under Part 101 of our Rules, UPCS stations, as well as wireless equipment manufacturers and frequency coordinators.

Fixed Microwave Services. Fixed microwave services include common carrier,[13] private operational-fixed,[14] and broadcast auxiliary radio services.[15] At present, there are approximately 22,015 common carrier fixed licensees and 61,670 private operational-fixed licensees and broadcast auxiliary radio licensees in the microwave services. The Commission has not created a size standard for a

[5] 5 U.S.C. § 601(3) (incorporating by reference the definition of "small business concern" in 15 U.S.C. § 632). Pursuant to the RFA, the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register." 5 U.S.C. § 601(3).

[6] Small Business Act, 15 U.S.C. § 632 (1996).

[7] *See* SBA, Office of Advocacy, "Frequently Asked Questions," http://web.sba.gov/faqs/faqindex.cfm?areaID=24 (revised Sept. 2009).

[8] 5 U.S.C. § 601(4).

[9] Independent Sector, The New Nonprofit Almanac & Desk Reference (2002).

[10] 5 U.S.C. § 601(5).

[11] U.S. Census Bureau, Statistical Abstract of the United States: 2006, Section 8, page 272, Table 415.

[12] We assume that the villages, school districts, and special districts are small, and total 48,558. *See* U.S. Census Bureau, Statistical Abstract of the United States: 2006, section 8, page 273, Table 417. For 2002, Census Bureau data indicate that the total number of county, municipal, and township governments nationwide was 38,967, of which 35,819 were small. *Id.*

[13] *See* 47 C.F.R. §§ 101 *et seq*. for common carrier fixed microwave services (except Multipoint Distribution Service).

[14] Persons eligible under parts 80 and 90 of the Commission's Rules can use Private Operational-Fixed Microwave services. *See* 47 C.F.R. Parts 80 and 90. Stations in this service are called operational-fixed to distinguish them from common carrier and public fixed stations. Only the licensee may use the operational-fixed station, and only for communications related to the licensee's commercial, industrial, or safety operations.

[15] Auxiliary Microwave Service is governed by Part 74 of Title 47 of the Commission's Rules. *See* 47 C.F.R. Part 74. This service is available to licensees of broadcast stations and to broadcast and cable network entities. Broadcast auxiliary microwave stations are used for relaying broadcast television signals from the studio to the transmitter, or between two points such as a main studio and an auxiliary studio. The service also includes mobile television pickups, which relay signals from a remote location back to the studio.

small business specifically with respect to fixed microwave services. For purposes of this analysis, the Commission uses the SBA small business size standard for the category Wireless Telecommunications Carriers (except Satellite), which is 1,500 or fewer employees.[16] The Commission does not have data specifying the number of these licensees that have no more than 1,500 employees, and thus are unable at this time to estimate with greater precision the number of fixed microwave service licensees that would qualify as small business concerns under the SBA's small business size standard. Consequently, the Commission estimates that there are 22,015 or fewer common carrier fixed licensees and 61,670 or fewer private operational-fixed licensees and broadcast auxiliary radio licensees in the microwave services that may be small and may be affected by the rules and policies proposed herein. We note, however, that the common carrier microwave fixed licensee category includes some large entities.

Unlicensed Personal Communications Services. As its name indicates, UPCS is not a licensed service. UPCS consists of intentional radiators operating in the frequency bands 1920-1930 MHz and 2390-2400 MHz that provide a wide array of mobile and ancillary fixed communication services to individuals and businesses. The NPRM potentially affects UPCS operations in the 1920-1930 MHz band; operations in those frequencies are given flexibility to deploy both voice and data-based services. There is no accurate source for the number of operators in the UPCS. Since 2007, the Census Bureau has placed wireless firms within the new, broad, economic census category Wireless Telecommunications Carriers (except Satellite).[17] Prior to that time, such firms were within the now-superseded category of "Paging" and "Cellular and Other Wireless Telecommunications."[18] Under the present and prior categories, the SBA has deemed a wireless business to be small if it has 1,500 or fewer employees.[19] Because Census Bureau data are not yet available for the new category, we will estimate small business prevalence using the prior categories and associated data. For the category of Paging, data for 2002 show that there were 807 firms that operated for the entire year.[20] Of this total, 804 firms had employment of 999 or fewer employees, and three firms had employment of 1,000 employees or more.[21] For the category of Cellular and Other Wireless Telecommunications, data for 2002 show that there were 1,397 firms that operated for the entire year.[22] Of this total, 1,378 firms had employment of 999 or fewer employees, and 19 firms had employment of 1,000 employees or more.[23] Thus, we estimate that the majority of wireless firms are small.

Wireless Equipment Manufacturers are defined by the Census Bureau as follows: "This industry comprises establishments primarily engaged in manufacturing radio and television broadcast and

[16] 13 C.F.R. § 121.201, NAICS code 517210.

[17] U.S. Census Bureau, 2007 NAICS Definitions, "517210 Wireless Telecommunications Categories (Except Satellite)"; http://www.census.gov/naics/2007/def/ND517210.HTM#N517210.

[18] U.S. Census Bureau, 2002 NAICS Definitions, "517211 Paging"; http://www.census.gov/epcd/naics02/def/NDEF517.HTM.; U.S. Census Bureau, 2002 NAICS Definitions, "517212 Cellular and Other Wireless Telecommunications"; http://www.census.gov/epcd/naics02/def/NDEF517.HTM.

[19] 13 C.F.R. § 121.201, NAICS code 517210 (2007 NAICS). The now-superseded, pre-2007 C.F.R. citations were 13 C.F.R. § 121.201, NAICS codes 517211 and 517212 (referring to the 2002 NAICS).

[20] U.S. Census Bureau, 2002 Economic Census, Subject Series: Information, "Establishment and Firm Size (Including Legal Form of Organization," Table 5, NAICS code 517211 (issued Nov. 2005).

[21] *Id.* The census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with "1000 employees or more."

[22] U.S. Census Bureau, 2002 Economic Census, Subject Series: Information, "Establishment and Firm Size (Including Legal Form of Organization," Table 5, NAICS code 517212 (issued Nov. 2005).

[23] *Id.* The census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with "1000 employees or more."

wireless communications equipment. Examples of products made by these establishments are: transmitting and receiving antennas, cable television equipment, GPS equipment, pagers, cellular phones, mobile communications equipment, and radio and television studio and broadcasting equipment."[24] The SBA has developed a small business size standard for Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing, which is: all such firms having 750 or fewer employees.[25] According to Census Bureau data for 2002, there were a total of 1,041 establishments in this category that operated for the entire year.[26] Of this total, 1,010 had employment of under 500, and an additional 13 had employment of 500 to 999.[27] Thus, under this size standard, the majority of firms can be considered small.

Frequency Coordinators. Neither the Commission nor the SBA has developed a small business size standard specifically applicable to spectrum frequency coordinators. Since 2007, the Census Bureau has placed wireless firms within the new, broad, economic census category Wireless Telecommunications Carriers (except Satellite).[28] Prior to that time, such firms were within the now-superseded category of "Paging" and "Cellular and Other Wireless Telecommunications."[29] Under the present and prior categories, the SBA has deemed a wireless business to be small if it has 1,500 or fewer employees.[30] Because Census Bureau data are not yet available for the new category, we will estimate small business prevalence using the prior categories and associated data. For the category of Paging, data for 2002 show that there were 807 firms that operated for the entire year.[31] Of this total, 804 firms had employment of 999 or fewer employees, and three firms had employment of 1,000 employees or more.[32] For the category of Cellular and Other Wireless Telecommunications, data for 2002 show that there were 1,397 firms that operated for the entire year.[33] Of this total, 1,378 firms had employment of 999 or fewer

[24] U.S. Census Bureau, 2002 NAICS Definitions, "334220 Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing"; <http://www.census.gov/epcd/naics02/def/NDEF334.HTM#N3342>.

[25] *See* 13 C.F.R. § 121.201, NAICS code 334220.

[26] U.S. Census Bureau, American FactFinder, 2002 Economic Census, Industry Series, Industry Statistics by Employment Size, NAICS code 334220 (released May 26, 2005); <http://factfinder.census.gov>. The number of "establishments" is a less helpful indicator of small business prevalence in this context than would be the number of "firms" or "companies," because the latter take into account the concept of common ownership or control. Any single physical location for an entity is an establishment, even though that location may be owned by a different establishment. Thus, the numbers given may reflect inflated numbers of businesses in this category, including the numbers of small businesses. In this category, the Census breaks-out data for firms or companies only to give the total number of such entities for 2002, which was 929.

[27] *Id*. An additional 18 establishments had employment of 1,000 or more.

[28] U.S. Census Bureau, 2007 NAICS Definitions, "517210 Wireless Telecommunications Categories (Except Satellite)"; http://www.census.gov/naics/2007/def/ND517210.HTM#N517210.

[29] U.S. Census Bureau, 2002 NAICS Definitions, "517211 Paging"; http://www.census.gov/epcd/naics02/def/NDEF517.HTM.; U.S. Census Bureau, 2002 NAICS Definitions, "517212 Cellular and Other Wireless Telecommunications"; http://www.census.gov/epcd/naics02/def/NDEF517.HTM.

[30] 13 C.F.R. § 121.201, NAICS code 517210 (2007 NAICS). The now-superseded, pre-2007 C.F.R. citations were 13 C.F.R. § 121.201, NAICS codes 517211 and 517212 (referring to the 2002 NAICS).

[31] U.S. Census Bureau, 2002 Economic Census, Subject Series: Information, "Establishment and Firm Size (Including Legal Form of Organization," Table 5, NAICS code 517211 (issued Nov. 2005).

[32] *Id.* The census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with "1000 employees or more."

[33] U.S. Census Bureau, 2002 Economic Census, Subject Series: Information, "Establishment and Firm Size (Including Legal Form of Organization," Table 5, NAICS code 517212 (issued Nov. 2005).

employees, and 19 firms had employment of 1,000 employees or more.[34] Thus, we estimate that the majority of these firms are small.

D. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities.

This NPRM addresses the possibility of allowing additional flexibility for UPCS devices operating in the 1920-1930 MHz band by eliminating or increasing the least-interfered channel monitoring threshold that a UPCS device must employ when using the least-interfered channel access method. In addition, this NPRM addresses the possibility of decreasing from 40 to 20 channels the number of channels that a UPCS device must define and monitor to use the least-interfered channel access method. This item does not contain any new reporting or recording keeping requirements.

E. Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered.

The RFA requires an agency to describe any significant alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): (1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for small entities; (3) the use of performance, rather than design, standards; and (4) an exemption from coverage of the rule, or any part thereof, for small entities.[35]

We have proposed to reduce burdens wherever possible. Our proposals regarding the UPCS band would reduce burdens on small entities. Our proposal to increase the least-interfered channel-threshold will increase the utilization of the UPCS by allowing access to usable channels that are currently restricted under the current Rules, resulting in more efficient use of the UPCS-band spectrum. It will also allow a greater density of UPCS devices to be used with fewer base stations, thereby reducing the infrastructure costs for a UPCS system, and will prevent the out-of-band emissions from adjacent-band AWS mobile transmitters from limiting access to the UPCS band. Our proposal to raise the least-interfered channel threshold, rather than eliminate the threshold, will prevent one UPCS systems' device's from limiting the range of another UPCS system's devices, which would require the installation of additional base stations to mitigate. Our proposal to reduce from 40 to 20 channels the number of channels a UPCS device must define and monitor to use the least-interfered channel access method would prevent devices that can provide state-of-the-art broadband services from being denied use of the least-interfered channel access method and consequently experiencing restricted access to UPCS-band channels.

We will continue to examine alternatives in the further with the objectives of eliminating unnecessary regulations and minimizing significant economic impact on small entities. We seek comment on significant alternatives commenters believe we should adopt.

F. Federal Rules That May Duplicate, Overlap, or Conflict With the Proposed Rules.

None.

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[34] *Id.* The census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with "1000 employees or more."

[35] 5 U.S.C. § 603(c).